

## STUDIES ON LEIODIDÆ

BY MELVILLE H. HATCH

Some years ago I published a table of the described genera of this family (Hatch, Jour. N. Y. Ent. Soc. XXXVII, 1929, p. 1-6). Since then Portevin (Hist. Nat. Col. France I, 1929, p. 543) has pointed out that *Xanthosphæra* Fairm. is probably founded on a composite specimen and is to be regarded as a synonym of *Triarthron* and *Cyrtusa*. I myself have in press the description of a remarkable blind genus, *Typhloleiodes*, from northwestern Oregon. Except for the absence of eyes, it runs to *Hydnobius*, being distinguished therefrom by its truncate labrum.<sup>1</sup> In order not to confound *Typhloleiodes* with the totally distinct *Scotycryptini*, the first line of the key will have to be rephrased as follows:

“A<sup>1</sup>. With or without eyes; tarsi three to five segmented, if without eyes (*Typhloleiodes*) the tarsi five segmented; abdomen five or six segmented.”

*Hydnobius* Schm.

In the *matthewsi*-section of this genus, with the labrum feebly emarginate, Mr. W. J. Brown has recently described two species: *simulator* from British Columbia (Can. LXIV, 1932, p. 6) and *validus* from Quebec (l.c., p. 202).

The following key to the males of the *substriatus*-section of the genus, with the labrum deeply bilobed, will serve to introduce three new species from western Washington and render unnecessary comparative statements under the several species. I have had before me of the previously described species only *substriatus* LeC., represented by specimens from Alberta and Washington, and *pumilus* LeC. (*latidens* LeC.) represented by specimens from

<sup>1</sup> “Labrum” should replace “clypeus” under *Hydnobius* and *Dietta* on page 1 of my key. Two other corrections in my key may here be noted: (1) In the Leiodini (p. 1) the anterior are *with* spines and in the Agathidiini (p. 3) the anterior tibiæ are usually *without* spines; (2) *Pseudocolenis* was described by Reitter and not by Portevin. *Typhloleiodes* was described in Pan. P. Ent. XI. 1935. p. 116.

Quebec kindly presented to me by Mr. W. J. Brown. Despite this, I feel that the characters of my new species are of such moment as to render their description justified. For bibliography see Hatch, Col. Cat. 105, 1929, p. 11-12.

Key to Males of *substriatus*-section of *Hydnobius* Schm.

1. Metafemora somewhat broader than in female, but not dentate, denticulate, or serrate.
2. Elytra eight-striate, the intervals alternately finely closely and coarsely distantly punctate; metatibia arcuate; length 2-2.5 mm.; Colorado, British Columbia ..... *obtusus* LeC.
- 2'. Elytra with eighteen nearly equal rows of punctures; metatibia straight; length 2.5 mm.; Alaska ..... *luggeri* Hatch.
- 1'. Metafemora dentate, denticulate, or serrate along lower margin.
3. Metafemora with a well developed tooth on lower margin towards apex.
4. Elytra confusedly punctate; metafemoral tooth longer than broad, obliquely truncate at apex; metatibia straight; length 3.5 mm.; British Columbia, Oregon, California, Colorado ..... *longulus* LeC.
- 4'. Elytra substriately punctate; length 1.5-2.5 mm.
5. Punctures of elytral intervals subequal to those of the striæ; metatibiæ straight or nearly so.
6. Metafemoral tooth subspinose, as long or slightly longer than broad, the margin of the femora proximad to the tooth finely serrulate; elytral intervals not transversely wrinkled; length 2-2.5 mm.; Novia Scotia, New York, Michigan, Canada, Colorado, Alberta, Washington ..... *substriatus* LeC.
- 6'. Metafemoral tooth triangular.
7. Metafemoral tooth shorter, obliquely truncate at apex; length 2 mm.; New York ..... *laticeps* Notman.
- 7'. Metafemoral tooth longer, acute; elytral intervals somewhat transversely wrinkled; length 1.5-2 mm.; Quebec, Colorado, California ..... *pumilus* LeC. (*latidens* LeC.).
- 5'. Punctures of elytral intervals considerably fainter than those of the striæ, the intervals faintly transversely wrinkled; metafemoral tooth triangular, acute; metatibia strongly arcuate at base; length 1.9 mm.; western Washington ..... *kiseri* sp. nov.
- 3'. Metafemora without tooth on lower margin towards apex; metatibia straight.
8. Metafemora broadly obtusely lobed along lower margin towards apex, the edge of the femur just before the apex obliquely truncate, the margin proximad to the lobe finely serrulate; elytral punctation substriate, the punctures of the intervals nearly equal to those of the striæ, the intervals feebly transversely wrinkled; length 3 mm.; western Washington ..... *lobatus* sp. nov.
- 8'. Metafemora neither lobed or dentate, the lower margin set with four or five minute denticles; elytral punctation substriate, the punctures of

the intervals feebler, the intervals strongly regularly transversely strigose; head and pronotum somewhat less regularly transversely wrinkled;<sup>2</sup> length 1.8–2 mm.; western Washington and British Columbia ..... *femoratus* sp. nov.

***Hydnobius kiseri* sp. nov.**

Male: length 1.9 mm.; pale straw colored; labrum deeply bilobed; head and pronotum shining, finely sparsely punctate, the head more so than the pronotum; pronotum subequal in width to elytra, about two-thirds as long as broad, the apex more than three-fourths as wide as the base, the sides arcuate and finely margined, the basal angles obtuse, the base margined; elytra shining, with distinct sutural stria extending in front of basal third; the elytral punctures moderately impressed, in longitudinal series, with the punctures of the intervals rather feeble, the intervals with faint obliquely transverse wrinkles; basal segments of front and middle tarsi not or very feebly dilated; metafemur with a prominent triangular tooth on lower margin towards apex, the outer surface of the femur coarsely but not densely punctate; metatibia strongly arcuate at basal two-fifths.

Type male: Harper, Wash. (vii-4-1931. R. W. Kiser).

***Hydnobius lobatus* sp. nov.**

Male: length 3 mm.; rufo-testaceous; labrum deeply bilobed; head and pronotum shining, punctate, the head more finely so than the pronotum; pronotum subequal in width to elytra, five-eighths as long as broad, the apex about nine-tenths as broad as base, the sides arcuate and finely margined, the basal angles broadly rounded, the base margined, somewhat more broadly so towards the sides; elytra shining, with impressed sutural stria extending in front of middle and continued thence to base by one of the numerous rows of elytral punctures; elytral punctures distinct, arranged in feebly impressed longitudinal series, those of the intervals nearly as large but not quite as regularly arranged, the intervals with occasional faint transverse wrinkles; basal segments of front and middle tarsi scarcely dilated; metafemur with an evident low obtuse rounded lobe at that portion of the lower margin occupied by a tooth in *kiseri* and other species, the edge of the femur between the apex of the femur and the tip of the lobe obliquely truncate, the margin of the femur proximad to the lobe finely serrulate, the outer surface of the femur punctate, sparsely pubescent; metatibia straight.

Type: Manchester, Wash. (IV-22-1934), collected by Miss Harriet White.

<sup>2</sup> With somewhat similarly transversely strigose elytral intervals is *arizonensis* Horn, known only from the female. In this species, however, only the alternate elytral intervals are punctate.

**Hydnobius femoratus** sp. nov.

Length 1.8–2 mm.; rufous, the antennal club somewhat darker; labrum deeply bilobed; head and pronotum shining, finely punctate, the punctures joined by numerous more or less discontinuous transverse strigæ; pronotum at basal third a trifle wider than elytra, three-fifths as long as wide, apex three-fifths as wide as base, the sides strongly arcuate and finely margined, the hind angles obtusely rounded, the base very broadly margined at sides, narrowly margined at middle; elytra shining, with sutural stria nearly entire, towards the base punctate and feebly impressed; elytral punctures in feebly impressed longitudinal series, the intervals more finely but regularly punctate and regularly transversely strigose; basal segments of front and middle tarsi evidently dilated in male, simple in female; metafemora simple in female, in male with the lower margin set with a series of four or five denticles; metatibia straight.

Type male: Seattle, Wash. (V–28–1929. M. H. Hatch). Allotype female: same data VI–3–1929. Two paratype males: same data: V–26–1929 and VI–20–1929. One paratype female; same data: VI–7–1929. One paratype female: Tod's Inlet, B. C. (Buschart Gardens, V–30–1930. M. H. Hatch). The Seattle specimens were taken sweeping towards sundown in a lightly wooded area that has since been made into a playfield.

*Leiodes* Latr. (*Anisotoma* Schm., Horn, Leng)

Of the species listed by me (Hatch, Col. Cat. 105, 1929, p. 36–37) under *Leiodes* s. str., *conferta* LeC., *paludicola* Cr., and *strigata* LeC. can probably be placed in the subgenus *Pseudohydnobius* Ganglb., in which the punctures of the striae and intervals are subequal. I now doubt, however, the correctness of my assigning (l. c., p. 38) the species of the *obsoleta*-group (with mesosternum vertical between the coxae) to the subgenus *Oreosphaerula* Ganglb., which is characterized by a strongly carinate mesosternum, the carination suddenly declivous in front of the tarsi.

*Leiodes horni* Hatch (*humeralis* Horn) and *merkeliana* Horn. —*Merkeliana* is, in reality, far more closely related to *horni* than to *valida* Horn, as implied in the original description. In fact, it is possible that it is simply a phase of *horni* with very strongly developed or exaggerated male secondary sexual characters. I have specimens of both from Washington.

*L. valida* Horn and *L. assimilis* LeC. are similar in that the males of both have the lower outer margin of the metafemur crenulate or serrulate. In *valida* the femur is described as subangulately dilated or subdentate at the middle, the crenulation confined to the portion between the angulation and the base. The male metafemur in *assimilis* was described as unmodified except for the serrulation, but a short series of males from Thunder River, Quebec, kindly presented to me by Mr. W. J. Brown, as well as a single male collected by myself at the Straits of Mackinaw, Michigan, show that the apical condyle of the ventral surface varies from obtusely rounded to prominently subdentately produced; the length of the animal, moreover, may be as low as 2.7 mm. In *serripes* sp. nov., described below, the male metafemur is distinctly subangulately dilated at about the basal two-fifths, the margin thence to the condyle finely denticulo-serrate, the condyle broadly arcuately and somewhat prominently lobate.

***Leiodes* (s. str.) *serripes* sp. nov.**

Length 2.6–3.5 mm. Castaneous, the head, pronotum, and antennal club somewhat darker to nearly piceous; head shining, finely densely punctate with a transverse series of four larger punctures; pronotum shining, somewhat less finely and densely punctate, with a short series of coarser punctures along the base just within the broadly rounded hind angles, four-sevenths as long as broad, widest in front of the hind angles, the apex about two-thirds as wide as the base, the sides strongly and the base broadly arcuate, the sides and apex finely beaded; elytra with striae coarsely punctate, feebly impressed except the sutural stria which is strongly impressed, the intervals finely punctulate, the alternate intervals with distant larger punctures; mesosternum oblique between the coxæ, evidently carinate, the carina not declivous in front of the coxæ; metasternum and abdominal sternites alutaceous; basal segments of pro- and mesotarsi somewhat dilated in male, narrow in female; metafemur obliquely strigulose, coarsely and sparsely punctate, simple in female, in male distinctly subangulately dilated at about the basal two-fifths, the margin thence to the condyle finely denticulo-serrate, the condyle broadly arcuately and somewhat prominently lobate; metatibia slender and nearly straight in female, strongly arcuate towards apex in male.

Type male: Seattle, Wash. (V-30-1929. M. H. Hatch). Allotype female: same data V-28-1929. Paratypes males: Seattle, Wash. 5-16-13 and Mt. Rainier, Wash. (Green Water R., June 6, 1930, M. H. Hatch and Paradise Park, Aug. 8, 1930, M. H. Hatch). Paratype females: same data as type VI-2-1928, and

Seattle, Wash. (5-16-13), with which are associated two other females from Seattle (July 5, 1928 and 5-16-13). The type and allotype were taken sweeping in the same locality as the *Hydnobius femoratus* described above. The 3.5 mm. specimen is a male from Paradise Park with the apex of the metatibia unusually strongly arcuate and the pronotum nearly concolorous with the elytra; I hesitate for the present to regard it as other than an individual variant.

*Anisotoma* Ill. (*Liodes* Lacord., Horn, Leng, etc.)

***Anisotoma interstitialis* sp. nov.**

Length 3 mm.; oval; testaceous, the antennæ, the front of the head on either side towards the eyes, the disc of the pronotum and a large medio-sutural spot on either elytron castaneous; head and pronotum shining, finely punctate; pronotum four-ninths as long as wide, widest at base, the apex five-ninths as wide as base, the sides arcuately convergent from the narrowly rounded basal to the broadly rounded apical angles, sides and apex finely beaded, base broadly arcuate at middle and oblique at extreme sides towards the angles; elytra at base a little wider than pronotum, widest between basal fourth and third, with sutural stria impressed at apical half, the other striae represented by about seven longitudinal bands of coarse punctures with narrower bands of fine punctures in between; mesosternum not carinate; metasternum and abdominal sternites alutaceous, punctate.

Type and paratype: Seattle, Wash.

Runs to *geminata* Horn in Horn's Key (Trans. Am. Ent. Soc. VIII, 1880, p. 297) from which it is distinguished by its paler color (*geminata* is black), the broader bands of coarse punctures and finely punctate intervals (these impunctate in *geminata*).

*Agathidium* Ill.

My attempts to define the subgenera of this genus (Jour. N. Y. Ent. Soc. XXXVII, 1929, p. 4) and to allocate the Nearctic species among them (Col. Cat. 105, 1929, p. 71-72, 81) may be much improved on. First, I give a translation of the key to the three principal subgenera as given in Schaufuss, Calwer's Kaferbuch ed. 6, I, 1909, p. 289, substituting *Cyphocele* for *Saccocele* as explained by me in Col. Cat. 105, 1929, p. 78.

1. Elytra with oblique humeral angles. Mesosternum carinate almost to the apex. Body completely contractile. Mandible of male simple. Female tarsi 5-4-4 ..... subg. *Agathidium* s.str.

- Elytra with humeral angles obtusely or rectangularly rounded. Mesosternum briefly or not carinate. Body incompletely contractile. Male frequently with the left mandible enlarged or horned. Female tarsi 5-4-4 or 4-4-4.
- 2. Head narrowed directly behind the eyes or with only a short tempora ..... subg. *Neoceble* Gozis.
- Head behind the eyes with well developed tempora half as long as the eyes. Female tarsi 5-4-4 ..... subg. *Cyphocele* Thoms.

Applying these characters to the species set forth in Fall's recent and most excellent review of the Nearctic species (Ent. Am. XIV, 1934, p. 99-131), it is possible to allocate our species as follows.

In *Agathidium* s. str.: *oniscoides* Beauv., *rubellum* Fall, *compressidens* Fall, *exiguum* Melsh., *dentigerum* Horn, *alutaceum* Fall, *californicum* Horn, *depressum* Fall, *jasperanum* Fall, *dubitans* Fall, *revolvens* LeC., *cavisternum* Fall, *virile* Fall, *conjunctum* Brown, *omissum* Fall.

In the subgenus *Neoceble* Gozis:<sup>3</sup> *sexstriatum* Horn, *bistriatum* Horn, *estriatum* Horn, *parvulum* LeC., *parile* Fall, *rusticum* Fall, *laetum* Fall, *contiguum* Fall, *athabascanum* Fall, *alticola* Fall, *columbianum* Fall, *rotundulum* Mann., *brevisternum* Fall, *atronitens* Fall, *repentinum* Horn, *politium* LeC., *maculosum* Brown and var. *franciscanum* Brown, *pulchrum* LeC., *picipes* Fall, *difforme* LeC. (*canadensis* Brown).

In the subgenus *Cyphocele* Thoms.: *angulare* Mann., *concinnum* Mann., *municeps* Fall, Pan-P. Ent. X, 1934, p. 171 (*temporale* Fall nec Sahlb.), *assimile* Fall, *mollinum* Fall.

I find I have specimens of two undescribed species of the subgenus *Neoceble*.

***Agathidium (Neoceble) kincaidi* sp. nov.**

Female: length (contracted) 1.3 mm.; globose, strongly convex and contractile; dark piceous brown, the feet and antennæ a little paler, the margins of the pronotum and elytra translucent; head, pronotum, and elytra shining, alutaceous, finely and shallowly punctate, the elytra without a scutellar stria; pronotum about three-fifths as long as wide, the side margin strongly arcuate, the hind angles broadly rounded; female tarsi 4-4-4.

Type and paratype: Loveland, Wash. (April 8, 1913). Collected by Trevor Kincaid.

<sup>3</sup> Dr. Fall, by correspondence, kindly confirms the absence of a postocular tempora in those species in which the feature is not mentioned in his review.

From the other species without scutellar stria, *kincaidi* is distinguished from *maculosum* Brown by its uniform coloration and smaller size and from *rotundulum* Mann. and *brevisternum* Fall by its feebly punctate dorsal surface, impunctate in these species).

*Agathidium (Neoceble) varipunctatum* sp. nov.

Length 1.8 mm.; oval; castaneous; head shining, finely punctate, without post-ocular tempora, transversely impressed across vertex, the left mandible with (male) or without (female) a long tooth directed obliquely caudad; pronotum shining, finely punctulate, less than half as long as broad, the side margins suboblique in front of the obtusely rounded hind angles; elytra shining, with well impressed sutural stria in apical half, the surface with intermixed coarser and finer punctures, some of the coarser punctures feebly serially arranged; metasternum and abdominal sternites alutaceous, punctate; tarsi of female 5-4-4.

Type male: Seattle, Wash. (IV-13-1931, M. H. Hatch). Allotype female: same data II-18-1934. Paratype female: same data 1933.

This species runs to the *pulchrum-picipes-difforme*-group of Fall's key (i.e., p. 104-105) from all of which, as well as from the other species without postocular tempora and with a sexually dimorphic left mandible, it appears to differ by the intermixed coarse and fine punctures of the elytra. From *pulchrum*, moreover, it differs by the absence of maculation, from *picipes* by the castaneous legs, and from *difforme* by the absence of a darker scutellar spot.

Scotocryptini

The biological relationships of this interesting group have recently been reviewed by Dr. George Salt (Trans. Ent. Soc. London 77 (2), 1929, p. 450-452, pl. XXVI, fig. e, f, g.), who has added original observations in connection with a couple of the species. Therein and in Col. Cat. 105, 1929, p. 83, I express the opinion that *Scotocryptus obscurus* Sharp is synonymous with *S. meliponae* Girard. I have now before me, through the kindness of the authorities of the British Museum, a cotype of *obscurus* Sharp from Bahia, Brazil. It reveals a species closely related to the species I identified as *meliponae* Girard in Dr.



Salt's paper. The antennal structure is the same,<sup>4</sup> but the color is piceous black, not dark rufous as Dr. Salt's specimen; the length is about a millimeter less, about 3.1 mm., and the elytra are, perhaps, a trifle more elongate. The species may well be retained as distinct until more specimens of these interesting beetles have been collected and reported upon.

I take the present opportunity to record *Parabystus inquilinus* Matth. from the nest of the bee *Trigona* sp. at Guapiles, Costa Rica. My specimen is one of three collected by Mr. Ferd. Neerman and sent to me through the kindness of Dr. Fritz van Emden. The species is previously known from Cerro Zunil, Guatemala, and Palpa, Mexico.

*Note.*—All type material of new species described in the present paper is deposited in the collection of the author.

<sup>4</sup> In my descriptions of *meliponae* and *melitophilus* in Dr. Salt's paper read "seventh" and "sixth" for "eighth" and "seventh" antennal segments. The error was mine and not Dr. Salt's!

